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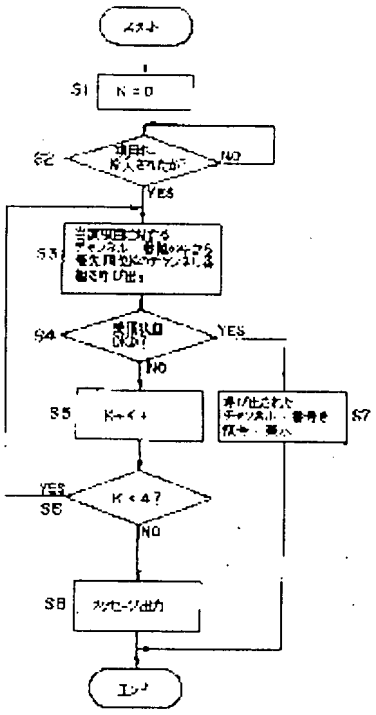
(54) BROADCAST RECEIVER

(57)Abstract:

PURPOSE: To select a selection program pair whose reception state is excellent with high priority and to improve the channel selection operation by selecting the channel selection program pair registered with priority sequentially in response to the reception state.

CONSTITUTION: When an item of channel selection object is selected (step S2), a channel selection program pair comprising a channel and a program registered in a memory corresponding to the selecting item in advance with priority is read from the memory (step S3) to check the reception state of the channel selection program pair (step S4). When the reception state is wrong, the priority is decreased by one rank (steps S5, S6), and the channel selection program pair with a succeeding higher priority (step S3). When the channel selection program pair with an excellent reception state is implemented, the channel selection program pair is outputted (step S7) and when the channel selection program pair with excellent reception state cannot be selected from the registered channel selection program pair, a message representing it is outputted and the processing is terminated.



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[Date of extinction of right]	

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CLAIMS

[Claim(s)]
[Claim 1] A receiving means to receive a broadcasting electric-wave, and the channel selection means which sides with a predetermined electric wave from the broadcasting electric-wave which received with said receiving means, and takes out a broadcast signal, A receive state detection means to detect the receive state of the broadcast signal tuned in with said channel selection means, An output means to output the contents of broadcast according to the broadcasting electric-wave which received with said receiving means, A storage means to memorize with the priority of a channel selection of two or more channel selection program pairs which it is going to tune in, A channel selection directions means to make the channel selection of the channel selection program memorized for said storage means start, When initiation of a channel selection of a channel selection program pair is directed by said channel selection directions means, two or more pairs of channel selection programs which controlled said channel selection means and were memorized by said storage means are made to tune in from the channel selection program pair of the highest priority. When the receive state detected by said receive state detection means to the tuned-in channel selection program pair concerned is a defect, The broadcast receiving set characterized by having the channel selection control means tuned in with said channel selection means until it makes the low channel selection program of priority tune in with said channel selection means one by one and a channel selection program with the good receive state by said receive state detection means tunes in.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] The invention in this application relates to the broadcast receiving set which can tune in the program about information to know simply and promptly in a detail about a broadcast receiving set.
[0002]
[Description of the Prior Art] A race card is seen, and if it is in a teletext receiving set etc., in order to tune in a program to receive conventionally, a listener chooses the channel of a broadcast receiving set as a broadcast receiving set, for example, a television receiving set, and a radio set pan, and sets a program to them. Thus, when a listener performs channel actuation of a broadcast receiving set, that of selection ****** of a program is troublesome each time. Then, the various channel selection approaches for making a program easy to tune in are devised from the former. For example, there is the approach of choosing promptly the channel set up beforehand by setting a specific channel as one or more keys beforehand, making memory memorize, and supplying the key corresponding to the channel corresponding to a program receiving. Moreover, one channel selection key is prepared, whenever it supplies the channel selection key concerned, a channel can be switched, and there is a method of tuning in the target program by repeating the injection of one channel selection key successively.
[0003]
[Problem(s) to be Solved by the Invention] However, if it was in such a conventional broadcast receiving set, the channel selection of a program is still troublesome and there was room of amelioration. Namely, by setting a specific channel as one or more keys beforehand, making memory memorize, and supplying the key corresponding to the channel corresponding to a program receiving By the approach of choosing the channel set up beforehand, the listener who operates it had to memorize with which channel was made equivalent to which key, and it registered, and when he had forgotten which channel was registered into which key, there was a problem that availability fell extremely. Moreover, by the approach of switching a channel, whenever it prepares one channel selection key and supplies the channel selection key concerned, it needed to carry out by having repeated the injection of a channel selection key, and there was a problem that operability was bad until it tuned in the target channel. Moreover, priority may not be given to selection of a channel over the approach of selection of a program, it may be first given to the class of program over it, and it may be chosen as it. If it is in a teletext receiving set especially, the program about specific information is chosen and there is a demand of wanting for the target information to come to hand promptly. moreover, in the broadcast receiving set by which has some which are carried in migration cars, such as a portable broadcast receiving set and an automobile, etc. as a broadcast receiving set, and have been moved in this way When it tunes in by the channel selection approach of the conventional broadcast receiving set and the receive state of the tuned-in channel is bad The key which registered another channel anew was supplied, the channel was chosen, or the injection of a channel selection key was repeated, it needed to carry out by having repeated the key stroke and there was a problem that operability was bad until the channel selection of the channel

which is broadcasting the target information was performed. Then, by performing a predetermined key stroke once, the invention in this application enables it to tune in the target program automatically, and aims at raising the operability of a channel selection of a broadcast receiving set.

[0004]

[Means for Solving the Problem] The channel selection means which invention according to claim 1 sides with a predetermined electric wave from the broadcasting electric-wave which received with a receiving means to receive a broadcasting electric-wave, and said receiving means, and takes out a broadcast signal, A receive state detection means to detect the receive state of the broadcast signal tuned in with said channel selection means, An output means to output the contents of broadcast according to the broadcasting electric-wave which received with said receiving means, A storage means to memorize with the priority of a channel selection of two or more channel selection program pairs which it is going to tune in, A channel selection directions means to make the channel selection of the channel selection program memorized for said storage means start, When initiation of a channel selection of a channel selection program pair is directed by said channel selection directions means, two or more pairs of channel selection programs which controlled said channel selection means and were memorized by said storage means are made to tune in from the channel selection program pair of the highest priority. When the receive state detected by said receive state detection means to the tuned-in channel selection program pair concerned is a defect, It is characterized by having the channel selection control means tuned in with said channel selection means until it makes the low channel selection program of priority tune in with said channel selection means one by one and a channel selection program with the good receive state by said receive state detection means tunes in.

[0005]

[Function] In invention according to claim 1, a receiving means receives a broadcasting electric-wave and a broadcast signal is taken out from the broadcasting electric-wave which received with a channel selection means. A receive state detection means detects the receive state of the broadcast signal which outputted the contents of broadcast according to the broadcasting electric-wave which received with the receiving means with the output means, and was tuned in with the channel selection means. The channel selection of a channel selection program which memorized two or more channel selection programs which it is going to tune in with said channel selection means with the priority of a channel selection for the storage means, and memorized them for it on the other hand at this storage means is directed with a channel selection directions means. When initiation of a channel selection of a channel selection program is directed by this channel selection directions means, two or more pairs of channel selection programs in which the channel selection control means controlled the channel selection means, and was registered into the storage means are made to tune in from the channel selection program of the highest priority. A channel selection control means makes it tune in with a channel selection means, when the receive state of the tuned-in channel selection program concerned is a defect as a result of detection by said receive state detection means until it makes the low channel selection program of priority tune in with a channel selection means one by one and a channel selection program with a good receive state tunes it in as a result of detection by the receive state detection means. Therefore, while being able to make the channel selection program which gave and registered priority beforehand only by directing initiation of a channel selection with a channel selection directions means tune in When the receive state of the tuned-in channel selection program cannot receive normally [it is bad and], priority can be lowered one by one, the good channel selection program of a receive state can be made to tune in automatically, and the channel selection program made into the purpose can be tuned in easily, without performing troublesome channel selection actuation. Consequently, the operability on the channel selection of a broadcast receiving set can be raised.

[0006]

[Example] Hereafter, the invention in this application is concretely explained based on an example. Drawing 1 - drawing 4 are drawings showing one example of the broadcast receiving set concerning the invention in this application. Drawing 1 is the block diagram of the broadcast receiving set 1 of one example of the invention in this application, and the broadcast receiving set 1 is equipped with an

antenna 2, a tuner 3, VIF4, a microprocessor 5, the error detection machine 6, text VRAM 7, CG8, the display controller 9, a display 10, CPU11, memory 12, the keyboard 13, the HARASHIN number generator 14, the frequency divider 15, and the power unit 16 grade. This broadcast receiving set 1 can receive the broadcast performed by repeating the program of a teletext or a specific item.

[0007] A power unit 16 transforms an external power or the power source from a cell (illustration abbreviation) into a predetermined electrical potential difference, and supplies it to each part of the broadcast receiving set 1. The control signal from CPU11 is inputted into this power unit 16, and a power unit 16 performs initiation and a halt of current supply with this control signal.

[0008] The broadcasting electric-wave which the broadcast receiving set 1 received the broadcasting electric-wave with the antenna (receiving means) 2, and received with the antenna 2 is sent to a tuner 3. A tuner (channel selection means) 3 is the so-called electronic tuner which consisted of a coil, capacity, resistance, etc., and operates under the control from CPU13. A tuner 3 sides with the electric wave of the frequency directed from CPU13, takes out the signal of the frequency, and outputs it to VIF4.

[0009] VIF4 consists of a demodulator circuit, a detector circuit, etc., restores to it and detects the signal inputted from a tuner 3, and takes out a video-signal part from this signal.

[0010] The microprocessor 5 is equipped with the A/D converter, the buffer, the decoder, etc., and a microprocessor 5 changes into a digital signal the video signal of an analog inputted from VIF4 with the A/D converter, and it stores it in a buffer. Moreover, a microprocessor 5 decodes an input signal with the decoder, and changes it into alphabetic data.

[0011] The digital signal stored in the buffer of a microprocessor 5 is taken out one by one, and is outputted to the error detection machine 6, and the error detection machine (error detection means) 6 outputs the number of errors which detected and detected the number of errors in it to a microprocessor 5 and CPU11.

[0012] Text VRAM 7 memorizes the character position, the magnitude, and the character code on the display screen under control of CPU11.

[0013] CG8 will output the display dot pattern to the display controller 9, if the display dot pattern corresponding to magnitude and a code is memorized and magnitude and a code are inputted from text VRAM 7.

[0014] The display controller 9 generates a position signal and a status signal, and outputs them to a display 10 so that it may consist of an entry sequence counter and a display-position control circuit and a display may indicate the dot pattern train inputted from CG8 by sequential at the lower right from the upper left of a field.

[0015] A display (output means) 10 consists of Y-CTR21, X-CTR22, and LCD (liquid crystal display) 23, and drives LCD23 with the driving signal from Y-CTR21 and X-CTR22. Y-CTR21 and X-CTR22 output the driving signal which controls the ON/OFF specified to each coordinate of LCD23 based on the position signal and status signal which are inputted from the display controller 9 to LCD23. The display pixel is arranged in the shape of a dot matrix, and LCD23 is turned on or (for example, black display) switched off with the driving signal from Y-CTR21 and X-CTR22 (transparence display).

[0016] CPU (channel selection control means)11 consists of a microprocessor, ROM, RAM, etc., and the program as a broadcast receiving set 1, the frequency corresponding to the number and channel number of a selectable channel, etc. are memorized in ROM. RAM is used as work-piece memory, and according to the program in ROM, a microprocessor controls each part of the broadcast receiving set 1, and operates it as a broadcast receiving set 1.

[0017] As shown in drawing 2 , the keyboard (channel selection directions means) 13 is equipped with the item selection key 31, the program selection key 32, the channel selection key 33, ON/off-key (ON/OFF) 34 of a power source, the delivery scrolling key 35, and the return scrolling key 36 grade, and performs various actuation of the broadcast receiving set 1. The item (for example, item which shows the classification of the program of the weather, traffic information, stock quotations, news, a dish, etc.) of the program beforehand chosen by the item key 31 can be chosen, and the channel of a broadcasting station can be chosen by the channel key 33. Moreover, the program of each channel can be chosen by the program selection key 32, and ON/OFF of the power source of the broadcast receiving set 1 can be

operated by ON/off-key 34. The scrolling keys 35 and 36 can scroll the program which can be tuned in, when two or more items beforehand memorized by ROM of CPU11 when each item key 31 is supplied, and two or more items registered into the memory 12 mentioned later can be scrolled to right order or a reverse order and the program key 32 is supplied. Furthermore, when the channel key 33 is supplied, the channel which can be tuned in can be tuned in by the scrolling keys 35 and 36.

[0018] Memory (storage means) 12 consists of RAM etc., and memorizes the data for an automatic channel selection. That is, as shown in drawing 3 , the field is roughly classified for every item, in the field of each item, a channel number and a program match memory 12 and it is memorized. Registration of the item to this memory 12, a channel, and a program can be performed by operating the above-mentioned keyboard 13. That is, if the item key 31 is supplied, only one, an item will be read from ROM and will be displayed on LCD23. The item will be chosen, if the item which operates the scrolling keys 35 and 36, and switches and wishes for the item by which it is indicated by sequential is displayed when it is not the item for which the displayed item wishes. CPU11 will memorize the selected item to the predetermined item storage region of memory 12, if selection of an item is performed. Two or more items can be registered into memory 12 by carrying out about the item which wants to carry out sequential registration of the above-mentioned processing. Moreover, if the channel key 33 and the program key 32 are supplied, the channel number and program for which it wishes by the scrolling keys 35 and 36 are similarly displayed on LCD23 and the corresponding channel number and program are displayed when making it correspond to each item and registering a channel and a program, the channel number and program will be chosen. The group of the channel number and program which were made to correspond to the item concerned and were chosen as memory 12 from choosing an item is made to memorize as a channel selection program to the selected channel number and the selected program. In addition, registration of a channel number or a program can set up an item first in addition to the above-mentioned approach, for example, and can carry out sequential registration of a channel number and the program for every item of this.

[0019] The HARASHIN number generator 14 is the so-called crystal oscillator which consisted of Xtal, resistance, capacity, etc., and generates the original clock signal of constant frequency.

[0020] The frequency divider 15 is formed by combining several steps of binary counters, carries out dividing of the original clock signal inputted from the HARASHIN number generator 14, generates the 1Hz clock signal which can be used as a reference signal for clocks, and outputs it to CPU11. CPU11 -- the clock signal from this frequency divider 15 -- current time -- clocking -- displaying current time on LCD23, or performing ON / off control of the power source of the broadcast receiving set 1 **** -- etc. -- it uses for various control.

[0021] Next, an operation is explained. While the broadcast receiving set 1 can also perform a time stamp and broadcast is not received, it is performing the time stamp to LCD23.

[0022] That is, when ON / off key 34 of a keyboard 13 are turned OFF, the broadcast receiving set 1 clocks current time with the clock signal inputted by CPU11 from a frequency divider 15, and outputs the information on current time to the location where a display position is determined and text VRAM 7 corresponds. The information on current time is outputted to the display controller 9 through CG8 from this text VRAM 7, and current time is displayed on the predetermined location of LCD23.

[0023] If ON / off key 34 of a keyboard 13 are turned ON in this condition, CPU11 will output the control signal (for example, signal of "H") which directs ON to a power unit 16, and a power unit 16 will supply a power source to a tuner 3, VIF4, a microprocessor 5, and the error detection machine 6, if the control signal which directs ON is inputted. Moreover, CPU11 outputs a reset signal to a microprocessor 5, and makes initialization processing perform to a microprocessor 5. If initialization processing is completed, after taking out the signal of the frequency corresponding to a channel predetermined by the tuner 3 from the broadcasting electric-wave which received with the antenna 2 and performing recovery / detection processing by VIF4, the video signal corresponding to the program specified from CPU11 is chosen, and it outputs to a microprocessor 5. After a microprocessor 5 carries out digital conversion of the video signal with an A/D converter, it is stored in a buffer for a part for every 1 scan line, is outputted to the error detection machine 6, and makes the error detection machine 6

detect an error signal. The error detection machine 6 outputs the detected number of errors to a microprocessor 5 and CPU11, when there is the number of errors within limits with error recovery possible in which, is decoded with the decoder to build in and outputs a microprocessor 5 to text VRAM 7. Text VRAM 7 outputs a character code and magnitude to the lower right one by one from the upper left of the display screen at CG8, and CG8 outputs the pattern corresponding to the data sent from text VRAM 7 to the display controller 9, and the display controller 9 determines a display position and the contents of a display, and controls Y-CTR21 and X-CTR22. Y-CTR21 and X-CTR22 output a driving signal to LCD23, and display the contents corresponding to the location where LCD23 corresponds.

[0024] Thus, the broadcast receiving set 1 will display on LCD23 the contents of the channel set up beforehand, if ON/off-key 34 is supplied, but a listener can change the contents of a display by operating a keyboard 13, when the displayed contents are not the contents made into the purpose.

[0025] Modification actuation of the usual contents of a display is performed by operating the program key 32 or the channel key 33 of a keyboard 13. That is, in order to change a program, when a program can be changed one by one and a channel is changed by supplying the program key 32 and operating the scrolling keys 35 and 36, after supplying the channel key 33, a channel is changeable by operating the scrolling keys 35 and 36. CPU11 makes the electric wave of the channel which outputs the selected channel number to a tuner 3, and corresponds take out, and outputs a program to a microprocessor 5, makes the video signal corresponding to the program concerned choose it as a microprocessor 5, and makes decode and display processing perform at this time. When the program of a channel for which it wishes is displayed, it means that selection had completed the listener.

[0026] however, like a teletext, when a program is changed, and the program of a specific item is broadcast repeatedly and is by two or more channels When the receive state of the channel which there was much actuation until it tunes in the program of the item for which it wishes by this channel selection approach, and it is not only troublesome, but was tuned in, and a program is bad It is necessary to perform same actuation anew and to tune in the channel which is broadcasting the same item as a degree, and its program, and channel selection actuation is troublesome.

[0027] Then, in the full-service-broadcasting receiving set 1, if the item key 31 is supplied, the scrolling keys 35 and 36 are supplied and the target item is specified, the channel and program which the corresponding memory 12 was made to correspond to the item concerned beforehand, and were registered into it are tuned in according to priority, and when a receive state is bad, the following channel and following program of priority will be tuned in automatically.

[0028] That is, as shown in drawing 4 , CPU11 confirms whether reset to 0 the variable K which shows the priority of the channel selection program of the channel and program which are read from memory 12 by initialization processing when ON/off-key 34 of a keyboard 13 is supplied (step S1), the item key 31 was supplied after that, and the item was chosen by the scrolling keys 35 and 36 (step S2). An injection of the item key 31 reads the channel number of Variable K, and the channel selection program of a program clitteringly in the channel number of the item field where memory 12 was chosen, and the channel selection program of a program (step S3). Since an item key is just going to be supplied now, as priority K, "0" is set up and the channel number of the 1st place of priority and the channel selection program of a program will be read from memory 12. It judges whether CPU11 has the good receive state of the read channel number and the number before a program using the information on the number of errors into which it is inputted from the error detection machine 6 (step S4). If it judges that a receive state is not good, only 1 will increment Variable K (step S5), and it will be confirmed whether Variable K is over 4 (step S6). That is, at this example, the channel selection program to four can be registered for every item, and it is finding whether the receive state of 4 sets of channel selection programs which can be registered was checked at step S6.

[0029] At step S6, when Variable K is four or less, it judges that only the channel selection program which can be registered is not checking the receive state, it returns to step S3, and reads the following channel number and following program of priority from memory 12 (step S3). The receive state of this read channel number and a program is checked similarly (step S4), and the same processing is repeated when a receive state is not good (steps S5, S6, and S3, S4).

[0030] By step S4, when a receive state is good, the read channel number concerned and the video signal of a program are decoded, it displays on LCD23, and processing is ended (step S7). Therefore, only by choosing the item for which a viewer supplies the item key 31 and wishes by the scrolling keys 35 and 36, the program of the item for which a viewer wishes is tuned in according to the priority beforehand registered into memory 12, when a receive state is bad, it can tune in by the ability lowering priority one by one, and a receive state can display the program of a good channel. Consequently, without repeating troublesome channel selection actuation and performing it, also when a receive state is bad, the program of the item made into the purpose can be tuned in according to the priority set up beforehand, and the operability of the broadcast receiving set 1 can be raised.
[0031] Moreover, at step S6, when Variable K exceeds 4, a predetermined message is displayed on LCD12 and processing is ended (step S8). As this message, "since the receive state is bad, the program of hope cannot be tuned in" etc. in, for example. It not only displays this message on LCD23, but you may output it as voice.
[0032] In addition, although the item was made into the Maine selection item and the channel number and the program are registered as a channel selection program for every item in the above-mentioned example If only the channel number and program instead of what is restricted to this are registered as a channel selection program and the scrolling keys 35 and 36 of a keyboard 13 are supplied by the receive mode When sequential selection of the channel selection program registered beforehand is made according to priority and the good channel selection program of a receive state is chosen, you may make it make it display.
[0033] Moreover, although registration even of 4 sets is enabled as a channel selection program and it is made to perform selection processing to 4 sets one by one in the above-mentioned example, it cannot be overemphasized that the number of the groups which can be registered is not what is limited to this.
[0034] When it does not restrict to this and a power source is switched [for example,] on by ON / off key 34 of a keyboard 13, you may make it start an automatic channel selection in the above-mentioned example, based on the item set up, although he is trying to start the automatic channel selection of a channel selection program by supplying the item key of a keyboard 13 and choosing an item by the scrolling keys 35 and 36.
[0035]
[Effect of the Invention] According to this invention, channel selection initiation of the channel selection program memorized by the storage means only by directing with a channel selection directions means While being able to make the channel selection program which gave and memorized priority beforehand tune in automatically, when the receive state of the tuned-in channel selection program cannot receive normally [it is bad and] Another low channel selection program of priority can be made to tune in automatically one by one, and the channel selection program made into the purpose can be tuned in easily, without performing troublesome channel selection actuation. Consequently, the operability on the channel selection of a broadcast receiving set can be raised.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The block block diagram of the broadcast receiving set concerning the invention in this application.
[Drawing 2] The front view of the keyboard of the broadcast receiving set of drawing 1 .
[Drawing 3] Drawing showing the storage condition of the channel selection program of the memory 12 of drawing 1 . .
[Drawing 4] The flow chart which shows automatic channel selection processing.
[Description of Notations]
1 Broadcast Receiving Set
2 Antenna
3 Tuner
5 Microprocessor
6 Error Detection Machine
10 Display
11 CPU
12 Memory
13 Keyboard

[Translation done.]

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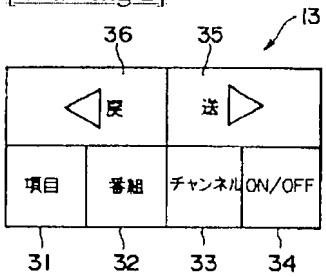
DRAWINGS

[Drawing 2]



[Drawing 3]

項目名 1	
チャンネル 1-1	番組 1-1
チャンネル 1-2	番組 1-2
- - - - -	
項目名 2	
チャンネル 2-1	番組 2-1
チャンネル 2-2	番組 2-2
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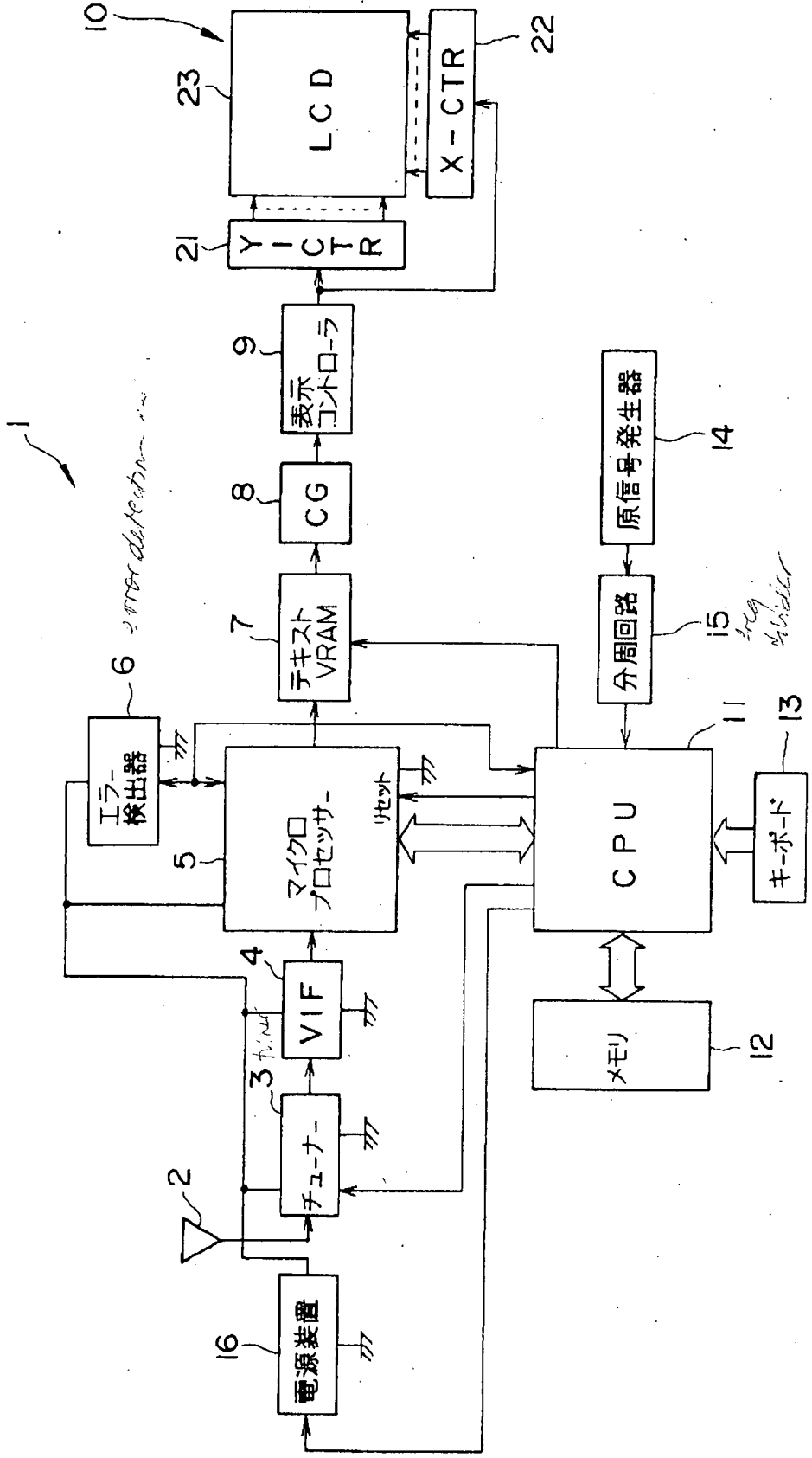
[Drawing 1]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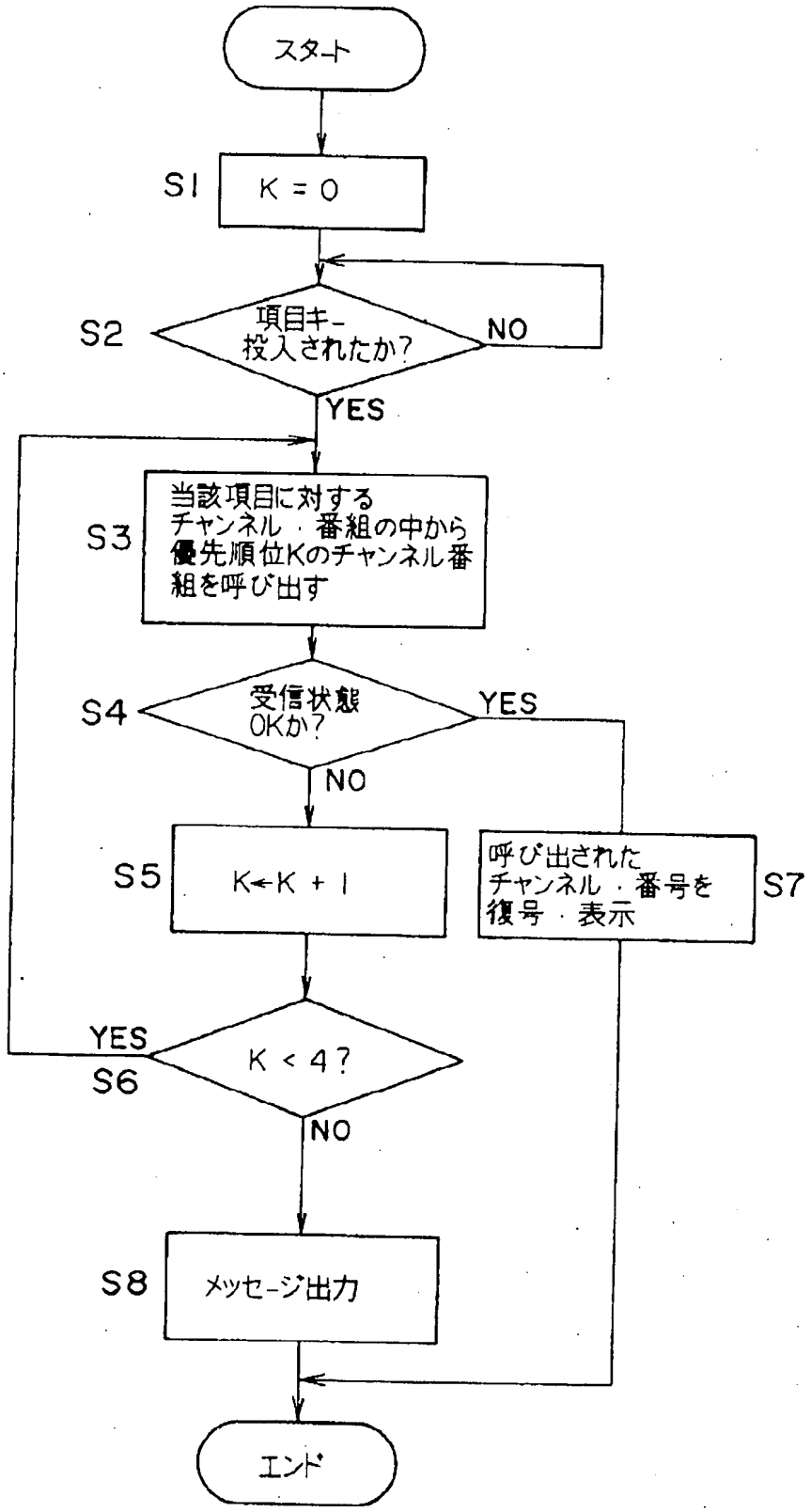
X-CTR
Y-CTR
表示コントローラ
CG
テキストVRAM
エラー検出器
マイクロプロセッサー
リセット
VIF
チューナー
電源装置
CPU
メモリ
キーボード
原信号発生器
分周回路

[Drawing 4]



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